

# Glycobiology Research

Glycobiology is an integrative science, crossing the fields of chemistry, biology, medicine and material science. In the broadest sense, glycobiology is the study of the structure, biosynthesis and biology of glycans (oligosaccharides, carbohydrates), which are present in every living organism. The field of glycobiology is growing fast, especially since it was shown that carbohydrate interactions play an important role in many biological processes and are of great interest for biomedical and biomolecular research.

**SELECTED LITERATURE:** Essentials of Glycobiology (Internet), 3rd Edition: A. Varki, et al.; Cold Spring Harbor Laboratory Press Chapter 1-60 (2015-2017) • Emerging glycobiology tools: A renaissance in accessibility: D.M. Oswald & B.A. Cobb; Cell Immunol. 333, 2 (2018)

## Gangliosides – High Quality Compounds from The Source

Gangliosides are composed of a glycosphingolipid (ceramide and oligosaccharide) with one or more sialic acids (e.g. n-acetylneuraminic acid, NANA) linked on the sugar chain. They are components of the cell plasma membrane that modulate cell signal transduction events, that are specific determinants in cellular recognition and cell-to-cell communication and that are important molecules in immunology and immunity. Gangliosides are involved in diseases such as Guillain-Barré Syndrome, Cholera, Tetanus, Botulism, Tay-Sachs and other neurodegenerative disorders, making them an interesting therapeutic target.

PRODUCT NAME	PID
Ganglioside GM1 . Na	AG-CN2-9000
Ganglioside GM2 . Na	AG-CN2-9001
Ganglioside GM3 . Na	AG-CN2-9002
Ganglioside GD1a . 2Na	AG-CN2-9003
Ganglioside GD1b . 2Na	AG-CN2-9004
Ganglioside GD3 . 2Na	AG-CN2-9005
Ganglioside GT1b . 3Na	AG-CN2-9006
Ganglioside GQ1b . 4Na	AG-CN2-9007
Asialo-Ganglioside GM1	AG-CN2-9008
Asialo-Ganglioside GM2	AG-CN2-9009

**SELECTED REVIEWS:** GM1 Ganglioside: Past Studies and Future Potential: M. Aureli, et al.; Mol. Neurobiol. 53, 1824 (2016) • GM3(Neu5Gc) ganglioside: an evolution fixed neoantigen for cancer immunotherapy: M. Labrada, et al.; Semin. Oncol. 45, 41 (2018) • Chemical and Physicochemical Properties of Gangliosides: L. Mauri, et al.; Methods Mol. Biol. 1804, 1 (2018) • Ganglioside Metabolism and Its Inherited Diseases: B. Breiden & K. Sandhoff; Methods Mol. Biol. 1804, 97 (2018) • Sphingolipids and neuronal degeneration in lysosomal storage disorders: S. Grassi, et al.; J. Neurochem. 148, 600 (2019)

### Ganglioside GM1 . sodium salt

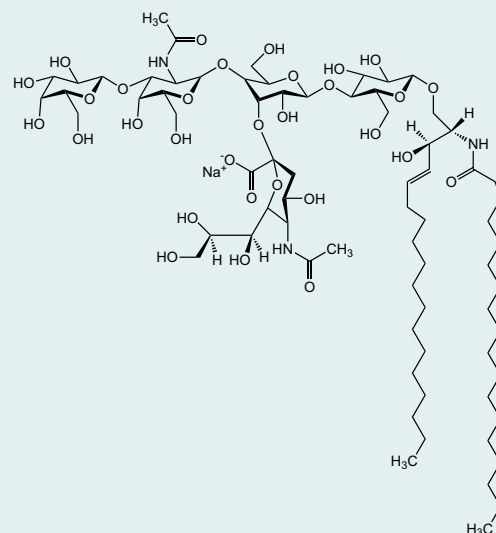
AG-CN2-9000      1 mg | 5 mg | 10 mg

**Formula:** C<sub>73</sub>H<sub>130</sub>N<sub>3</sub>O<sub>31</sub> . Na

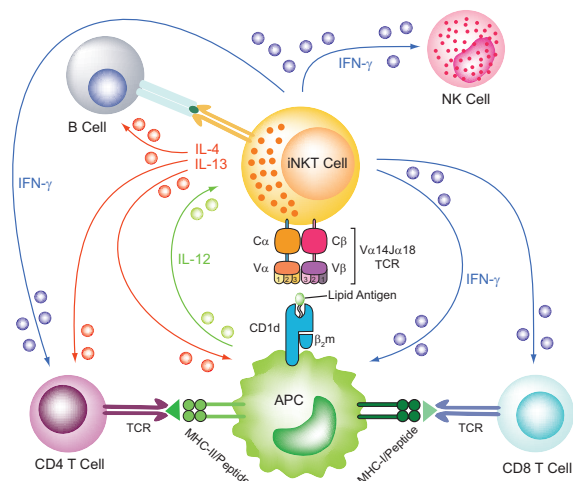
**MW:** 1545.8 . 23.0

**CAS:** 37758-47-7

**Source:** Isolated from bovine brain.



## CD1d Ligands – Potent iNKT Stimulators



Invariant natural killer T (iNKT) cells are a subset of innate-like lymphocytes that express a characteristic antigen receptor that includes an invariant TCR- $\alpha$  chain and recognize glycolipid antigens bound by the major histocompatibility complex (MHC)-class-I-related protein CD1d. iNKT cells are activated early during a variety of infections and inflammatory diseases and contribute to the subsequent development of adaptive immune responses. Consequently, iNKT cells play a critical role in the development and resolution of inflammatory diseases and represent attractive targets for the development of immunotherapies. In cancer a role in immunosurveillance was attributed to iNKT cells. They act as potent activators of antitumor immunity when stimulated with a synthetic agonist.

### THE SOURCE

#### $\alpha$ -Galactosylceramide [ $\alpha$ -GalCer; KRN7000]

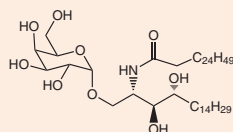
AG-CN2-0013

250  $\mu$ g | 1 mgFormula: C<sub>50</sub>H<sub>99</sub>NO<sub>9</sub>

MW: 858.3

CAS: 158021-47-7

Source: Synthetic.

**BULK available!**

### PRODUCT NAME

### PID

$\alpha$ -Galactosylceramide (Dansylated)	AG-CN2-0514
4-Fluorophenylundecanoyl- $\alpha$ -galactosylceramide [7DW8-5]	AG-CN2-0519
$\alpha$ -Galactosylceramide Analog I (water soluble) [KBC-007]	AG-CR1-3608
$\alpha$ -Galactosylceramide Analog 8	AG-CR1-3622
OCH (Truncated Analog of $\alpha$ -GalCer)	AG-CR1-3593
$\alpha$ -Mannosylceramide	AG-CR1-3594
$\beta$ -Mannosylceramide	AG-CR1-3621

## NEW

## New Fluorogenic Substrates

### 5-Dodecanoylaminofluorescein Di- $\beta$ -D-glucopyranoside [C12-FDGlu]

AG-CY1-0001

1 mg | 5 mg

Cell permeable non-toxic fluorogenic  $\beta$ -glucosidase substrate for *in vitro* and *in vivo* experiments.

### 5-Dodecanoylaminofluorescein Di- $\beta$ -D-glucuronide [C12-FDGlU; ImaGene Green]

AG-CY1-0002

1 mg | 5 mg

Cell permeable non-toxic fluorogenic  $\beta$ -glucuronidase substrate for *in vitro* and *in vivo* experiments.

## Also Available:

### Broad Panel of TLR4 Agonists:

**LPS, MPLA (synthetic & isolated), Lipid A and IAXO Compounds**

### Molecular Biology Reagents:

**X-Gal, IPTG, n-Dodecyl- $\alpha$ -D-maltoside, n-Dodecyl- $\beta$ -D-maltoside, OG, MEGA-8**